

## CLAIMS

I claim:

- 5     1.     A method for maximizing group membership comprising:
  - (a)     calculating a connectivity count of each vertex in a graph;
  - (b)     determining a maximum connectivity count for each vertex from said calculation;  
         and
  - (c)     removing a vertex from said graph with said connectivity count less than said  
10           maximum connectivity count.
2.     The method of claim 1, further comprising updating said connectivity count for all  
         remaining vertices in said graph following removal of a single vertex from said graph.
- 15    3.     The method of claim 1, further comprising individually removing all vertices with said  
         connectivity count less than said maximum connectivity count in said graph.
4.     The method of claim 1, further comprising removing all vertices in said graph until said  
         connectivity count of a least connected vertex is equal to said maximum connectivity  
20           count.
5.     The method of claim 1, wherein said vertex is selected from a group consisting of: a  
         computing node, components on a circuit board, division of points in a pattern,  
         partitions of items, and combinations thereof.

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6. The method of claim 1, wherein said graph is selected from a group consisting of: a cluster of nodes, circuit board components, pattern recognition, biological data, archeological data, project selection, classification, fault tolerance, coding, computer vision, economics, information retrieval, signal transmission, alignment of DNA with protein sequences, and combinations thereof.
7. A system to determine a maximum group membership comprising:  
a counter for calculating a connectivity count for each vertex in a graph;  
means for placement of each vertex in descending order of connectivity; and  
means for removal of a vertex from said graph with said connectivity count less than a maximum connectivity count.
8. The system of claim 7, further comprising means for an update of connectivity for each of said vertices subsequent to said removal of a vertex from said graph.
9. The system of claim 7, wherein said removal of a vertex from said graph with said connectivity count less than said maximum connectivity count in said graph is continuous until said connectivity count of a least connected vertex is equal to said maximum connectivity count.
10. The system of claim 7, wherein said vertex is selected from a group consisting of: a computing node, components on a circuit board, division of points in a pattern, partitions of items, and combinations thereof.
11. The system of claim 7, wherein said graph is selected from a group consisting of: a cluster of nodes, circuit board components, pattern recognition, biological data,

archeological data, project selection, classification, fault tolerance, coding, computer vision, economics, information retrieval, signal transmission, alignment of DNA with protein sequences, and combinations thereof.

- 5     12.     An article comprising:  
         a computer-readable signal-bearing medium;  
         means in the medium for calculating connectivity for each vertex in a graph;  
         means in the medium for selecting a least connected vertex for removal from a clique in  
         said graph; and  
10           means in the medium for removing said least connected vertex from said graph.
13.     The article of claim 12, wherein said means is selected from a group consisting of: a  
         recordable data storage medium, and a modulated carrier signal.
- 15     14.     The article of claim 12, wherein said means for selecting a least connected vertex for  
         removal from a clique in said graph includes placing vertexes of a graph in descending  
         order.
15.     The article of claim 12, further comprising means in the medium for updating  
20           connectivity for each remaining vertex in said graph subsequent to removal of said least  
         connected vertex.
16.     The article of claim 12, wherein said vertex is selected from a group consisting of: a  
         computing node, components on a circuit board, division of points in a pattern,  
25           partitions of items, and combinations thereof.

17. The system of claim 12, wherein said graph is selected from a group consisting of: a cluster of nodes, circuit board components, pattern recognition, biological data, archeological data, project selection, classification, fault tolerance, coding, computer vision, economics, information retrieval, signal transmission, alignment of DNA with protein sequences, and combinations thereof.